GasSens

Infrared Gas Detector

E12-15 IR NH3 Detector

OVERVIEW

The E12-15 Infrared (IR) Gas Detector is a rugged reliable microprocessor-based intelligent gas detector. The E12-15 IR can be used to monitor ppm levels to explosive levels of ammonia (NH_3) gas.

The E12-15 IR is ideally suited for use in harsh environments where electrochemical sensor life can be short. Areas such as engine rooms, emergency vents or other high level NH3 areas are excellent applications. The E12-15 IR Gas Detector performs reliably in the presence of silicone and other catalytic poisoning agents and can also operate in oxygen free environments or where high background gas levels are present. There are no known poisons that affect this technology.

The E12-15 IR is a stand-alone device providing a linear continuous 4-20 mA output representing 0 to full scale.

FEATURES

- Requires no routine calibration to ensure proper operation.
- Continuous self-test automatically indicates a fault, with fail to safe operation.
- A multi-layered filtering system protects optics from dirt and water ingress.
- Straight optical path eliminates the need for reflective surfaces, such as mirrors or beam splitters.
- Highly resistant to poisoning and etching.
- Standard 4-20 mA output (current source).
- Optional explosion-proof junction box with terminal block.

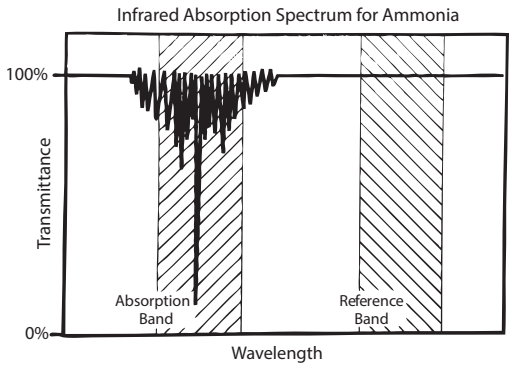


Figure 1: IR absorption spectrum



INFRARED DETECTION TECHNOLOGY

The E12-15 IR Gas Detector uses infrared absorption technology for detecting ammonia gas. Gases absorb infrared light only at certain wavelengths (*Figure 1*). The concentration of a gas can be quantified by measuring and comparing intensities in light bands where there is significant absorption by the target gas in bands where there is little absorption by the target gas.

The E12-15 IR uses an infrared light source that passes collimated light through a waveguide containing the gas sample. At the other end of the waveguide is a multiple channel receiver. The measuring channel intensities and the reference channel intensities are then analyzed to quantify the gas concentration. The gas concentration is then represented at the output as a gas density measurement of % Vol measurement or ppm.

If alarming and display is required, the B14 receiver can be used with either a single channel or multi-channel receiver system.



Figure 2: Single channel B14 receiver



Figure 3: Multi-channel B14 receiver

Badger Meter

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Product Data Sheet

SPECIFICATIONS

Detection Method	Infrared absorption
Output	4–20 mA (Source type), max. 1000 Ohm load at 24V DC supply voltage
Response Time	T50 < 15 seconds T90 < 30 seconds
Construction	6061 Aluminum
Dimensions	5.75 L × 2.75 in. Dia. (146 L × 70 mm Dia.)
Unit Weight	1.9 lb (0.862 kg)
Accuracy	±3% of full scale for applied gas concentrations up to 50% of full scale ±5% of full scale for applied gas concentrations above 50% of full scale
Operating Temperature Rating	–40 to 70 °C @ 0–99% RH (non-condensing)
Operating Voltage	18–32V DC
Power Consumption	5.1 Watt max.
Max. Current Draw (at 24V DC)	Average: 210 mA (Peak: 400 mA)

ORDERING INFORMATION

E2-AAAA-BB-E12-15 IR High Level Ammonia Detector

Suffix AAAA - Measurement Range	
0001	0–1%
0002	0–2%
0005	0–5%
0010	0–10%
0015	0–15%
Suffix BB - Sensor Style	
11	Transmitter only
12	Transmitter with flow cell
21	Transmitter with junction box
22	Transmitter with flow cell and junction box

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